JP04 20312

93-017530/02 A96 D21 E11 (A14) DOWO 90.07.06
DOW CORNING CORP *US 5173290-A
91.10.04 91US-770823 (+90US-548810) (92.12.22) A61K 7/11

Imparting curl retention to hair - using compsn. contg. vinyl copolymer-non-polar silsesquioxane inter-penetrating network as film-former

C93-007999

The improvement in a claimed process for imparting curl retention to hair is that the film-forming ingredient used is an interpenetrating polymer network (IPN) including

(A) a substd. vinyl copolymer with acrylic, carboxylate or ether polar functionality; and

(B) a nonpolar silsesquioxane of formula (I) or (II).

Also claimed is a hair treating compsn. comprising the above IPN together with, as solvent, water and/or alcohol, a hydrocarbon, supercritical CO_2 or N_2 or a volatile silicone.

$$(R'R''SiO)_x(SiO_{4/2})_y \quad (I)$$

$$(R'R''SiO)_x(SiO_{4/2})_y(R'''_3SiO_{1/2})_z \quad (II)$$

A(12-V4A) D(8-B5) E(5-E1, 5-E2C)

R', R'' and R''' = alk(en)yl, aryl or alkylaryl of 1-20C; x and z = 0-1000; and y = 1-1000.

ADVANTAGES

The use of silsesquioscanes with vinyl copolymers such as Gautrez (RTM) in the form of an IPN yields the following advantages:

(i) possibility of using as much as 30 wt.% solids of the vinyl copolymer in conventional pump hair sprays as opposed to the previous limit of only 7 wt.% solids, thus giving higher holding and reduced volatiles content;

(ii) reduced clogging during spraying;

(iii) plasticisation of the IPN components by each other without loss of curl retention; and

(iv) improved and more uniform film stiffness.

PREFERRED COMPOSITION

The IPN includes 0.1-30 (esp. 1-5) wt.% (B) and 1-30 (pref. 4-10) wt.% (A).

(A) is pref. vinyl Me ether/mateic anhydride copolymer (esp. prefd; e.g. Gantrez (RTM)); poly(vinylpyrrolidone

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(VP)/Et methacrylate (EM)/methacrylic acid (MA)) terpolymer; vinyl acetate (VA)/crotonic acid (CA) copolymer; VA/CA/vinyl neodeconate terpolymer; poly (VP/EM)-MA copolymer; octylacrylamide/acrylate/Bu aminoethyl methacrylate) copolymer; or poly(VP/dimethylamino-ethyl-methacrylate) copolymer; or their derivs.

EXAMPLE

A compsn. with 10% solids, viscosity 8.78 cs; curl retention 99% and medium spray pattern was obtd. by forming a soln. of 82.2g EtOH, 0.3g aminomethylpropanol and 150g Gantrez Es-225 (RTM: 7g solids partial Et ether of vinyl Me ether/mateic anhydride copolymer) and then adding 2.5g nonpolar silsesquioxane obtd. by hydrolysis of 33g $PhSiCl_3$ and 12.2g propyl-$SiCl_3$ in 39.8g toluene and 14.4g isoPrOH using sufficient water to give aq. phase contg. 13-16 wt.% HCl. (9pp1958CMDwgNo0/0).

Addnl. Data: HALLORAN D J, VINCENT J M

Div ex 90.11.05 90US-609488; Div ex US5085859 A; CIP of US5075103 A

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